for the recession of the node a little over 4°, the inclination decreasing about 0°·6.

THE WOLSINGHAM OBSERVATORY.—In the Report of this observatory for the year 1892 Mr. T. E. Espin tells us that although the zone work was interrupted by attention being given to Nova Aurigæ, yet one hundred and sixteen new Third-Type Stars were detected in zones + 55° and 56°. In the autumn, as the telescope was going to be devoted to the revision of double stars in connection with the new edition of "Celestial Objects for the Common Telescope," the driving clock was taken out and cleaned, and a new arrangement for letting the clock run for one and a half hours without rewinding was also added. Notwithstanding the pressure of work in this direction, as many as eight hundred and forty-seven measures were made in the autumn, "observing being carried on sometimes for twelve hours, and once for thirteen and a half at a stretch." With respect to the new edition of the work mentioned above, Mr. Espin gives a short description of the general scheme. The portions devoted to the planets and the sun (vol. i.) will have several foot-notes added to them, Mr. Denning will write a short chapter on comets and meteors, and chapters on celestial photography and spectroscopic work will also be inserted. The second volume will deal with double stars, &c., and will be entirely rewritten; the objects will be arranged in order of Right Ascension, and all double stars whose primaries are above 6·5 magnitude, and whose distance is less than 20″, will be included. The work of bringing the places up to 1900 was at the end of the year completed for the first twelve hours, and considerable progress has already been made in the next eight hours of Right Ascension. Mr. Espin refers to the death of Miss Compton, who took great interest in the work done at the Observatory, and who left a legacy for the purchase of a photographic telescope. This telescope is already in working order, its aperture being eight clear inches, and focal length forty-two inches, and will be devoted to the photography of the zones observed with the spectroscope for detecting variation in light. The Meteorological Department has also been increased by a hygroscope and solar radiation thermometer, the gifts of Miss Brooke.

UNITED STATES NAVAL OBSERVATORY.—From the report of the superintendent (Capt. F. C. McNair) of this observatory for the year ending June 30, 1892, we gather the following few notes. In October, 1891, owing to the retirement of Prof. Asaph Hall, the use of the 26-inch refractor was tendered to Mr. Asaph Hall, junior, the latter observing the satellite of Neptune, satellites of Saturn, and the two outer satellites of Uranus. During the period of opposition of Mars, in August, 1892, the instrument was employed by Prof. Hall for the purpose of securing measures of the satellites, as the superintendent thought that "it seemed fitting that Prof. Hall, the discoverer of these satellites, should have the privilege of observing them once more under such exceptionally favourable circumstances." With the transit circle practically no observations were made, as the instrument was under repairs previous to being set up in the new observing houses; the Meridian transit, on the other hand, was in constant use, chiefly in connection with the time service. The 9·6 inch equatorial was as usual employed in observing asteroids, occultations, &c., while two nights a week were set apart for the accommodation of visitors. The number of visitors at night is about 2500 per annum, the majority of whom are women. In the estimates of appropriations required for the service for the year ending June 30, 1894, we see that the superintendent asks for an expert elevator conductor, which is essential to prevent accident. Among the estimates for the new observatory is a request for three dwellings for observers, and this is accompanied by a note which we print here, and the truth of which every astronomer will endorse:—"In order that the work of a large observatory may be properly and economically done, it is absolutely necessary that the observers be within prompt call to their instruments throughout day and night. Very important observations can often be secured from the clearing of the sky for a few hours, or even in some cases for a few minutes, if the observer be within easy call by the watchman. This can only be accomplished, in the isolated situation of the new Observatory, by having dwellings upon the grounds for the observers. The Government erects dwellings at all its navy-yards, arsenals, forts, and schools for the officers on duty there. But no service requires such unremitting attention and constant presence at all hours as that of the astronomer, and no observatory can be regarded as economically managed which does not furnish dwellings for all its observers close by their instruments. It is estimated that with the observers living on the grounds of the new Observatory, not only will two or three times as much work be done as it will be possible to do otherwise, but the quality of this delicate work will be materially improved on account of the observers being in a proper physical condition to begin their labours, instead of with nerves unstrung from hurrying some miles from their homes immediately after meals, or at unreasonable hours of the night."

YALE ASTRONOMICAL OBSERVATORY.—Vol. i. Parts 3 and 4 of the publications of the Astronomical Observatory of Yale University contains (1) "A Triangulation of Stars in the Vicinity of the North Pole," by Prof. William L. Elkin; and (2) "Determination of the Orbit of the Comet 1847 VI.," by Miss Margaretta Palmer. With regard to the former paper, this was undertaken to determine the relative positions of some north polar stars to serve as fundamental points for a photographic survey of that region. Twenty-four stars, covering a considerable area, were selected for this work, and all the distances measured were large—that is, above 1000″. Out of 276 possible combinations of measuring the intermutual distances within the range of the heliometer, Prof. Elkin managed to employ 146, each combination undergoing three separate measurements. In the reduction of the measurements he gives full information as to the methods employed, showing the means of eliminating the systematic errors, &c., concluding with tables of the final results in Right Ascension and Declination and precessional tables. Miss Palmer prefaces her determination of the orbit of comet 1847 VI. with a short reference to its discovery and history, remarking that it is probably the only comet ever discovered independently by two women. Rümker in 1857 found the orbit to be of a distinctly hyperbolic nature, and the result of the present determination, by employing modern places for the sun and allowing for perturbations, &c., show that the observations can be best explained on the hypothesis of the hyperolic orbit, the new value for the elements differing slightly from the old ones.

GEOGRAPHICAL NOTES.

A COLONY only accessible through foreign territory is naturally unsatisfactory to its holders, and since the development of German South-west Africa, the inconvenience of having Walfish Bay as the only landing place for the interior has gradually increased. It is now announced that a new harbour has been found on German territory in the mouth of the Swartkop river. The stream is so small that it is marked on few general maps of Africa, and it may even turn out to be in the British sphere.

A PAPER for the next German Geographentag has been published in advance, by Prof. W. Köppen, under the title "Die Schreibung geographischer Namen." It deals in a very thorough manner with the principles which ought to regulate the orthography of place-names, and treats the whole matter of authoritatively published rules in a historical way from the first formulation of the Royal Geographical Society's Rules in 1885 to the new German rules (see NATURE, p. 89) adopted in 1892. Prof. Köppen has fully mastered his subject, and, from a thorough study of the phonetics of language, he has been able to formulate a scheme by which the Roman alphabet may be employed, with the aid of diacritical signs and groups of consonants, to represent almost every possible sound. The methods adopted in the official systems of the Royal Geographical Society and the German Colonial Office appear to the author of the pamphlet to be incomplete and unsatisfactory. The subject is one eminently adapted for full international discussion, and we hope that Prof. Köppen will not fail to bring the matter before the next international Geographical Congress.

POLAR exploration seems to have received a fresh stimulus, and we note with satisfaction the announcement in the American newspapers of Mr. Peary's new programme. He sails for Greenland in June, and will spend the winter not far from the site of his last winter's camp. A novelty in transport on the inland ice is to be the use of ponies shod with snow-shoes of a special pattern, experience in Alaska and Norway appearing to establish the practicability of the idea. The main object of the expedition is to survey the Arctic Archipelago immediately north of Greenland, and to determine the whole north coast of

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the mainland. Mr. Peary has no theories, and expects to have to modify his plans according to circumstances. He expects to reach higher latitudes than have previously been attained, but has no sentimental views as to reaching the pole. The whole of the expense of the expedition he hopes to defray by his lectures and the book describing his last year's experience, which will be published in June.

STROMBOLI.

ON June 24, 1891, an earthquake and volcanic explosion took place, followed by another shock on June 30. Some days after, the authors spent three days at Stromboli, and subsequently studied at their homes the materials they collected.

The paper commences with a description of the island, which not only adds nothing to what has already been published, but is inferior to what has been described by others. Mention is made of many changes during the last century, but great care is taken not to mention several writers who have described and illustrated the changes during the last few years. The writer, who was the first to photograph the crater of Stromboli, and has since published new photographs, is not even referred to, yet those photos are the best so far published of the volcano. It is regretable to see the frequency with which Prof. Mercalli quotes himself to the exclusion of several of his own countrymen, and especially foreigners. Since 1887, the single crater has been replaced by a number of cones which, according to the authors, are the same as those of 1889: I myself visited the crater in 1889, and those in the plates of this paper are very different in situation, which I can confirm by photos in my possession. The matter is of little importance, but more care should be shown in such statements. Those who have a good practical experience of active volcanoes know how often, from day to day these central conettes change.

The shock of the present eruption was quite local and was unobserved at Lipari. It was much more violent on the upper part of the mountain than lower down, and the authors reasonably conclude that the explosion was limited to the actual crater. Several landslips occurred on the crumbling slopes of the island. A column of vapour and lumps of incandescent lava were ejected to a level with the summit of the island, that is for a height of 225 m. Dust and lapilli were spread over the island though not to any great amount. Lava immediately began to flow from a short rift.

On June 30, another shock occurred, sufficiently strong to disturb the Milne seismoscopes of Lipari. After the usual ejection of lava cakes, lapilli, stones, &c., another lava stream started from a point near the eastern mouths. By July 6, when the authors visited the crater, the excessive activity had so diminished that no more lapilli or dust was being ejected. Three currents of lava flowed down the Sciarra to the sea, and as one divided into two branches, four reefs were formed at the water-line which it appears are being rapidly swept away by the waves.

The microscopic and chemical examination of the lava shows it to be a basalt verging on an andesite with 50 per cent. of SiO_2, with a little more potash than soda. The scoria ejecta resemble the lava in composition, except so far as their different rate of cooling modifies them. Besides the *essential*, some *accessory* ejecta were thrown out, which were old fumarolised materials from the new crater walls. The dust, or ashes, as the authors call it, was partly composed of black vitreous particles and glass fibres mixed with a brownish powder from the trituration of older volcanic materials.

No relation was found to exist between the eruptive spasm of Stromboli with several earthquakes that occurred before and after. A list of known eruptions of Stromboli are given, but it is a most imperfect one; for example the eruption of 1768, which was actually figured by Sir William Hamilton in his masterly work, is not even referred to, although lava not only issued from the crater, but also from a lateral opening on the western side of the Stromboli, and also was the first recorded issue of lava from this volcano. This list is more complete of late years, there being no less than fourteen eruptions from 1879 to 1888. Prof. Mercalli thinks there is a sympathetic action between the outbursts of Stromboli and Etna, and also the seismic foci of South Italy. He likewise finds a faint relationship between the position of the sun and moon when in opposition and conjunction but not with barometric pressure, but says that the daily variation in activity may so be related, as stated by the inhabitants.

H. J. JOHNSTON-LAVIS.

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[1] "Sopra il perii odo eruttivo dello Stromboli cominciato il 24 Guigno, 1891." By A. Ricco and G. Mercalli. Con appendice dell' Ing. S. Arcidiacono. *Ann. d. Ufficio C Met. e Geodinamico* ser. sec., pt. iii. vol. xi. 1889. (Paper printed 1892.)

FORTHCOMING SCIENTIFIC BOOKS.

MR. MURRAY has in preparation:—"The Life of Prof. Owen," based on his correspondence, his diaries, and those of his wife, by his grandson, the Rev. Richard Owen, with portraits and illustrations, 2 vols.; "Alone with the Hairy Ainu; or, 3,800 Miles on a Pack Saddle in Yezo and a Cruise to the Kurile Islands, by A. H. Savage Landor, with map and numerous illustrations by the author; "A Manual of Naval Architecture," for the use of officers of the navy, the mercantile marine, ship-owners, ship-builders, and yachtsmen, by W. H. White, F.R.S., third edition, thoroughly revised and in great part re-written, with 150 illustrations; "The Physiology of the Senses," by Prof. John McKendrick and Dr. Snodgrass, with illustrations (1) touch, taste, and smell (2) the sense of sight (3) sound and hearing; "Chapters in Modern Botany," by Prof. Patrick Geddes, with illustrations; "The Philosophy of the Beautiful, Pt. II.," by Prof. Knight; "Logic, Inductive and Deductive," by Prof. William Minto; "The Metallurgy of Iron and Steel," by the late Dr. John Percy, F.R.S., a new and revised edition, with the author's latest corrections, and brought down to the present time, by H. Bauerman, with illustrations.

Messrs. Longmans announce:—"Theosophy or Psychological Religion," the Gifford lectures delivered before the University of Glasgow in 1892, by Prof. F. Max Müller; "Telephone Lines and their Properties," by Prof. W. J. Hopkins; "Essays on Rural Hygiene," by Dr. George Vivian Poore; "Abdominal Hernia," by John Langton, M.R.C.S.; "A Treatise on Electricity and Magnetism," by G. W. De Tunzelmann in 2 vols.; "Papers and Notes on the Glacial Geology of Great Britain and Ireland," by the late Prof. Henry Carvill Lewis, edited from his unpublished MSS., with an introduction by Dr. Henry W. Crosskey; "The Making of the Body, a Reading Book for Children on Anatomy and Physiology," with many illustrations and examples, by Mrs. S. A. Barnett; "A Manual of Machine Drawing and Design," by David Allan Low (Whitworth scholar) and Alfred William Bevis (Whitworth scholar), with over 700 illustrations; "Diseases and Injuries of the Teeth, including Pathology and Treatment," a manual of practical dentistry for students and practitioners, by Morton Smale, M.R.C.S., and J. F. Colyer, L.R.C.P.; "Cotton Weaving and Designing," by John J. Taylor; "Clinical Lectures on Abdominal Hernia," chiefly in relation to treatment, including the radical cure, by William H. Bennett, F.R.C.S., with twelve diagrams in the text; "The Elements of Bacteriology," a manual for practitioners and students, by Prof. S. L. Schenk, translated by Dr. W. R. Dawson, with 100 illustrations, some of which are coloured; "Esquimaux Life," by Fridtjof Nansen, translated by William Archer, with illustrations.

Among Messrs. Macmillan and Co.'s announcements are:—"William Kitchen Parker, F.R.S," a short memoir by his son, Prof. T. Jeffery Parker, F.R.S.; "Text-book of Pathology: Systematic and Practical," by Prof. D. J. Hamilton, Vol. II.; "A Uniform Edition of Prof. Huxley's Essays," in 6 vols., comprising Lay Sermons, Addresses and Reviews, Critiques and Addresses, Science and Culture, American Addresses, Man's place in Nature, &c.; "Lectures on Sanitary Law," by A. Wynter Blyth, M.R.C.S.; "A Text-book of the Physiological Chemistry of the Animal Body," including an account of the chemical changes occurring in disease, by Prof. Arthur Gamgee, F.R.S., with illustrations, Vol. II.; "Tables for the Determination of the Rock-forming Minerals," compiled by Prof. F. L. Loewinson-Lessing, translated from the Russian by J. W. Gregory, with a glossary added by Prof. G. A. J. Cole; "Text-book of Geology," by Sir Archibald Geikie, F.R.S., with illustrations, third edition, thoroughly revised; "Atlas of Classical Antiquities," by Th. Schreiber, edited for English use by Prof. W. C. F. Anderson; "The Soil in Relation to Health," by Henry A. Miers and Roger Crosskey; "Elementary Treatise on Modern Pure Geometry," by R. Lachlan;

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